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Incidence and Determinants of Indebtedness among Farmer Households in the Cotton Belt of Rural Punjab

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Abstract

There is an old saying that Punjab farmers are born in debt, live in debt and die in debt. This study was assessed to measure the extent of debt; to find the nature, incidence and sources of debt; and to find out the factors determining debt among farmer households in the cotton belt of rural Punjab. The methodology of the study consisted of a research design including descriptive and quantitative data, which was gathered through schedules. A multi-stage stratified random sampling technique was employed to choose a sample size of 520 farmer households of different farm-size categories. The results highlighted that average amount of debt per sampled farmer household was Rs. 406970. The figure was the lowest (Rs. 182258) for marginal farmer households and the highest (Rs. 795444) for large farmer households, indicating considerable variations. Approximately 74.25 per cent of the debt was sourced from institutional credit. The marginal and small farmer households had incurred a significant proportion of total debt at exorbitant interest rates. The regression analysis revealed family size, ownership of land, expenditure incurred on purchasing farm inputs and inventory, unproductive consumption expenditure, and crop failure had a positive significant while farm income and ratio of earning members in the family were negatively related to indebtedness. Based on the analysis of this study, it was recommended that appropriate efforts must be taken to reduce indebtedness among the farmer households trough debt waiver, regulation of non-institutional credit sources, ensuring remunerative prices for agricultural produce, implementing land reforms and creating non-farm employment opportunities in rural areas.

Key words: Agricultural credit, Farmers, Family size, Institutional, Interest rate, Commission agents.

JEL Classification: Q140, Q120, J10, I1, E430, C2

Introduction

Indebtedness may be understood as the state of being under obligation. Indebtedness of any rural household often finds its genesis in the borrowing for particular exigencies like an accident or illness of a household member or a pressing need for a specific social occasion like marriage, etc. First, because a household hardly saves enough to meet such needs and second, because there is no provision for institutional borrowing in such cases, the only source of loan is the local moneylender who charges exorbitant interest rates for such a loan (NABARD, 2018).The seasonal nature of agriculture restricted the inflow of cash to acquire various agricultural inputs which were highly demanded in agriculture. The gap so created between demand and supply of funds is plugged in by borrowings either from institutional or non-institutional sources (Singh *et al*, 2014). Indebtedness is an important indicator of farmers' distress as the incidence of debt may be a direct outcome of the lack of viability of farming (Vatta and Budhiraja, 2020). The farmers, particularly marginal and small farmers, do not have enough income or resources to enable them to repay the debt; the principal amount multiplies rapidly to ensnare them in the cobweb of usury if it is a non-institutional debt at high rates of interest. More often than not, farmers try to make a provision of repayment by either mortgaging land or their labour power, which captivates their sources of income and further inability to repay debt drowned them into indebtedness (Mitra *et al*, 1986). Various studies estimate that the total debt of the farmers in Punjab ranges between Rs 70000 crore to Rs 100000 crore (India today, 2023). A report released by the National Statistical Office, Ministry of Statistics and Program Implementation stated the average outstanding loan per agricultural household (PAH) in Punjab was Rs 203249, which was the third highest in the country after Andhra Pradesh and Kerala (NSSO, 2021). The Congress government between 2018 to 2022 waived off loans of Rs 5.63 lakh taken by small and marginal farmers

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to the tune of Rs 4610 crore. The initiative was lauded by the farming community, but it only benefitted 24 per cent of the farmers (India today, 2023).

During the early 1930s, M. S. Darling highlighted the problem of indebtedness of the Punjab peasantry. The study observed that nearly 4/5th of the Punjab peasantry was in debt to the tune of 5-6 times of their annual income. The total debt of the Punjab farmers was Rs. 175 crore, which was 20 times the total debt of the Indian farmers. According to him, Punjab farmers born in debt, live in debt and die in debt (Darling, 1947). Today's reality is even more destructive and painful that some farmers in the State of Punjab committed suicide due to various socio-economic and psychological reasons, and indebtedness was one of the main reasons. Despite substantial improvement in agriculture productivity and the expansion of institutional sources of credit, the problem of non-viability of farming and indebtedness among the farmer households are the severe and unrelenting problems faced by the farmers even today in the Punjab State. Indebtedness has been acknowledged as one of the most infamous stumbling blocks in the way of rural prosperity. It is cancerous, self-perpetuating, malignant and maleficent. It abates agricultural production, abashes the social psyche, aggravates inequalities in the distribution of socio-economic opportunities and benefits, arrests social progress, and misdirects social efforts (Mitra *et al*, 1986).

Debt can also become a distressing phenomenon if the borrower's crop fails due to natural calamities, drought, use of spurious inputs, infructuous investments or other unforeseen reasons, or if production becomes uneconomic because of high input costs, stagnant technology and lack of remunerative prices which makes it impossible for the household to repay his capital and interest (Government of India, 2007).

The cotton belt of the State was the most affected region by the financial crisis as it suffered from the continuous failure of the cotton crop. It was noticed in 2015 that out of the 11.25 lakh acres sown under cotton crop in the Malwa region of Punjab, 6.75 lakh acres were affected in a whitefly attack, leading to approximately 60 per cent loss in the cotton production in that region. The crop failure was not only because of the pest attack but also because of spurious pesticides that flooded the state markets and were unknowingly used by farmers to control the whitefly attack (Khanna, 2015). When the crop failed, farmers had no means to repay the loan. Furthermore, interest transfers into a significant burden if the loan is taken from non-institutional sources like moneylenders who charges high rates of interest. The total amount owed, comprising both principal and compound interest, can sometimes become overwhelming, which lead the borrowers either mortgage or sell their land, thus, jeopardising their only means of livelihood. In some cases, the burden of debt and inability to repay the loan can serve as a critical factor contributing to farmers' suicides. Consequently, given the seriousness of the issue, this research was specially conducted in the cotton producing region of the State. This study aims to garner attention from policymakers in this particular region. Therefore, in this paper, an attempt has been made to measure the extent of debt; to find the nature and sources of debt; and to find out the factors determining debt among farmer households in the cotton belt of rural Punjab.

Data Sources and Methodology

In this study, both the primary as well as secondary data have been used. Secondary data has been collected from various journals, books, magazines, reports, dissertations, theses, web-sites, etc. Primary data has been collected through a well-structured schedule from selected farmer households using a multi-stage stratified random sampling technique for the period 2016-17. Firstly, four districts, Mansa, Bathinda, Sri Mukatsar Sahib, and Fazilka, have been selected purposely out of 9 districts of the cotton belt of rural Punjab. Secondly, all 23 developmental blocks of the selected districts have been chosen for the sample. Thirdly, one village from each block has been picked up for the study. Fourthly, out of the total number of the farmer households of different categories found in each selected village, 10 per cent of the farmer households from each category and of each village were randomly selected, after conducting village pilot survey and discussion with village head, i.e., sarpanch. In this way, 520 sampled farmer households of different farm-size categories consisting of 118 marginal, 126 small, 134 semi-medium, 115 medium, and 27 large have been selected for the survey purpose. Written consent was obtained from selected farmer households. Prior approval from the Department of Economics of Punjabi University Patiala was obtained for the study. Finally, descriptive statistical tools such as averages, percentages, regression, etc., have been used to analyse the results of the present study.

Multiple regression analysis was applied to find out the results determining the factors affecting the level of debt. The factors determining the indebtedness were also expected to vary across the different farm-size categories based on the relative effect of a particular variable on a particular farm-size category. The following regression model has been constructed to study the incidence of indebtedness in different farm-size categories. All the nine variables included in the regression equation influenced the level of indebtedness among farmers in one way or the other.

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9)$

Where,

Y= Outstanding Amount of Debt (Rs. Per household)

X_1= Size of Land Owned (in acres)

X_2 = Family Size (in Numbers)

X_3 = Ratio of Earning Members in the Family

X_4 = Education level of Family Head

X_5= Farm Income (Rs. per acre)

X_6= Expenditure on Farm Inputs and Inventory (Rs.)

X_7= Loan for Consumption or Unproductive Purpose (Rs.)

X_8 = Proportion of Non-institutional Debt to Total Debt

X_9 = Loss of rent due to crop failure (Rs.)

Results and Discussion

This paper attempts to analyse the extent of debt; the nature and sources of debt; and the factors determining debt among farmer households in the cotton belt of rural Punjab.

Extent of Debt among Sampled Farmer Households

Table 1 contains the information about the extent of debt among the sampled farmer households in the cotton belt of rural Punjab. Out of the total number of 520 sampled farmer households, 460 farming households were under debt. The table depicted that 88.46 per cent, i.e., more than 4/5th of the farming households in the cotton belt of rural Punjab, were under debt. The proportion of indebted households for the marginal and small farmer households was 88.98 and 88.10 per cent, while the proportion was 86.57, 89.57, and 92.59 per cent among the semi-medium, medium, and large farmer households, respectively. The average amount of debt per sampled farmer household was Rs. 406970. However, there were considerable variations in the average amount of debt per sampled farmer household across different farm-size categories. It was Rs. 182258 among the marginal farmer households, while for the small, semi-medium, medium, and large farmer households, the average amount of debt was Rs. 322429, Rs. 418836, Rs. 625139, and Rs. 795444, respectively. The average amount of debt per indebted household was found to be Rs. 460053. One similarity could be noticed that the average amount of debt per sampled household and per indebted household increased with the increase in the size of farm holdings. This result of the study was in consonance with the findings of the studies conducted by Pal and Singh, 2012 and Singh *et al*, 2017.

Moreover, the average amount of debt per owned acre of land was calculated to be Rs. 52922, whereas it was the highest (Rs. 127453) in the case of the marginal farmer households and the lowest (Rs. 25204) in the case of the large farmer households. The results of the study were supported by the findings of Singh *et al*, 2014. The average amount of debt per operated acre of land was found to be Rs. 40431. It was Rs. 56615 among the marginal and Rs. 25659 among the large farmer households and thereby followed a negative association with the size of farm holdings. It specified that the debt was more burdensome for the smaller categories than the large ones. The relative burden of the debt per acre of owned land in the marginal farm-size categories was 5.06 times higher than that of the large farm-size categories. The marginal and small farming households were highly dependent upon debt even for cultivating their smaller size of holdings. However, the large farm-size categories were in a position to finance the cultivation expenses out of their savings. The study conducted by Singh *et al*, 2017 also supported the results of the present study.

Sources of Debt among Sampled Farmer Households

Table 2 deals with the average amount of debt among farmer households in the cotton belt of rural Punjab. The data showed that non-institutional sources of credit were still playing an important role in providing loans to the

Table 1: Extent of debt among sampled farmer households **(Rs./unit)**

Particulars	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmer Households
No. of indebted households	105	111	116	103	25	460
No. of sampled households	118	126	134	115	27	520
Proportion of indebted households to sampled households (in per cent)	88.98	88.10	86.57	89.57	92.59	88.46
Average amount of debt per acre of owned land (in Rs.)	127453	96826	64936	42440	25204	52922
Average amount of debt per acre of operational land (in Rs.)	56615	52907	49269	34066	25659	40431
Average amount of debt per sampled household (in Rs.)	182258	322429	418836	625139	795444	406970
Average amount of debt per indebted household (in Rs.)	204824	366000	483828	697971	859080	460053

Source: Field survey, 2016-17

sampled farmer households. The data demonstrated that an average farming household was under a debt to the tune of Rs. 406970, out of which Rs. 302180 (74.25 per cent) had been taken from institutional sources and the remaining Rs. 104790 (25.75 per cent) from non-institutional sources of credit. The results of the study were in accordance with the findings of Singh *et al,* 2017 and NABARD, 2018,which observed that the institutional sources emerged as more preferred sources, with the maximum proportion of the loans reported to have been taken from them.

As far as different farm-size categories were concerned, there were considerable variations across them. The proportionate share of the institutional debt was positively associated with the size of the farm. A similar result was found in Singh *et al,* 2017 study. It was the highest (87.20%) among the large farmer households, while the share was 46.83 per cent among the marginal farmer households. On the other hand, the proportion of credit from non-institutional sources was inversely related to farm holdings' size. The data evidently provided an implication that the poor marginal and small farmer households, owning fewer assets, were highly dependent upon non-institutional sources as they obtained a significant proportion of credit from these sources. The study conducted by Samal, 2002 analysed similar findings.

Among the institutional sources of credit, commercial banks took the first place for lending Rs. 235938 (57.97%) to the farmer households, followed by co-operative banks/ societies, land development banks, and regional rural banks, which supplied credit amounting to Rs. 54039 (13.28%), Rs. 8750 (2.15%), and Rs. 3452 (0.85%), respectively. The large farmer households had obtained about 65.63 per cent of the credit from the commercial banks, whereas the proportion

Table 2: Per household average amount of debt among sampled farmer households(Mean values in Rs.)

Source of Debt	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmer Households
Institutional source						
Co-operative societies/banks	23564 (12.93)	36516 (11.33)	58590 (13.99)	77704 (12.43)	145630 (18.31)	54039 (13.28)
Commercial banks	61797 (33.91)	172563 (53.52)	235097 (56.13)	417870 (66.84)	522037 (65.63)	235938 (57.97)
Land development banks	0 (0.00)	3968 (1.23)	10075 (2.41)	19130 (3.06)	18519 (2.33)	8750 (2.15)
Regional rural banks	0 (0.00)	1032 (0.32)	5336 (1.27)	6522 (1.04)	7407 (0.93)	3452 (0.85)
Total institutional debt (A)	85360 (46.83)	214079 (66.40)	309097 (73.80)	521226 (83.38)	693593 (87.20)	302180 (74.25)
Non-institutional source						
Large farmers	18347 (10.07)	1349 (0.42)	2239 (0.53)	0 (0.00)	0 (0.00)	5067 (1.25)
Money-lenders	12754 (7.00)	12698 (3.94)	8396 (2.00)	6087 (0.97)	0 (0.00)	9481 (2.33)
Traders	6034 (3.31)	5056 (1.57)	0 (0.00)	0 (0.00)	0 (0.00)	2594 (0.64)
Commission agents	51712 (28.37)	82500 (25.59)	85299 (20.37)	94783 (15.16)	101852 (12.80)	79956 (19.65)
Relatives and friends	8051 (4.42)	6746 (2.09)	13806 (3.30)	3043 (0.49)	0 (0.00)	7692 (1.89)
Total non-institutional debt (B)	96898 (53.17)	108349 (33.60)	109739 (26.20)	103913 (16.62)	101852 (12.80)	104790 (25.75)
Total debt (A+B)	182258 (100.00)	322429 (100.00)	418836 (100.00)	625139 (100.00)	795444 (100.00)	406970 (100.00)

Source: Field survey, 2016-17
Note: Figures given in parentheses represent percentages of Total Debt.

was the lowest, i.e., 33.91 per cent among the marginal farmer households. Therefore, in both absolute and relative figures, the credit provided by the commercial banks witnessed a positive association with the size of landholdings. Also, the amount of credit availed from co-operative societies/banks had expressed a positive relationship with the size of farm. It was Rs. 23564 among the marginal farmer households and Rs. 145630 among the large farmer households. The amount of credit supplied by the land development banks and regional rural banks was also positively associated with the size of the farm. It could be noticed that the marginal farmer households availed credit neither from the land development banks nor from regional rural banks.

Among the non-institutional sources of credit, the commission agents got the first place for providing a credit of Rs. 79956 to the farmer households, and its share was 19.65 per cent to the total credit owed to the farmer households. In Punjab, the commission agents acted as middlemen for the sale of crops between the farmers and buyers, and were making the payments to farmers for their production. After deducting the outstanding loan amount, the balance left was disbursed to the farmers. One could be noticed that the share of credit supplied by the commission agent had a negative relation to the size of farm holdings. It was the highest (28.37%) among the marginal farmer households and the lowest (12.80%) among the large farmer households. Thus, the commission agents were the primary source of credit for the small farmer households. In contrast, the dependency of large farmer on commission agents was lowest. The proportionate share of relatives and friends was 1.89 per cent of the total credit to the sampled farmer households, while their relative share was the highest (4.42%) among the marginal farmer households. The large farmer households availed no credit from relatives and friends, while this share was negligible (0.49%) among the medium farmer households. The money lenders were the next important source of credit for the farmer households, as they got 2.33 per cent of their loans from the moneylenders.

Further, large farmers were another vital source of credit that supplied Rs. 5067 to the farmer households, and its share was 1.25 per cent of the total debt provided to the farmer households. The field survey revealed that the marginal, small, and semi-medium farmer households were also dependent upon the large farmer households for their credit needs. The marginal and small farmer households were also reliant on traders for advancing some loans from them. It was found in the survey that some of the marginal and small farmer households got pesticides and insecticides from the traders and also their daily consumption items from shopkeepers on credit.

The foregoing analysis showed that even after the development of banks and the various government schemes of subsidised loans for the poor farmer households, the commission agents were an essential source of credit for the marginal and small farmer households. The marginal and small farmer households found it easier to get loans from the commission agents than the institutional sources of credit for both productive and consumption purposes. The field survey observed that the marginal and small farmer households were less educated. Hence, they generally avoided formalities and cumbersome bank loan procedures and instead found it convenient to get loans from non-institutional sources. Similar results were also obtained in the studies by Government of India, 2008; Kaur and Singh, 2010; Singh *et al,* 2014 and Sharma, 2018.

Government of India (2008) and Singh *et al* (2014) stated that because of the complex procedural formalities of formal sources, the poor farmers preferred to approach the easily reachable informal sources of credit. These asset-poor farmer households did not have sufficient collateral such as jewellery, land, house, etc., to keep as security for advancing loans from banks (Government of India, 2008; Swain, 2001; Swain and Swain, 2007).

Factors Determining Indebtedness among Sampled Farmer Households

An outstanding amount of debt at a particular time is influenced by several economic and non-economic factors. However, an attempt has been made to analyse some of the economic, demographic, and social factors determining indebtedness among the farmer households. It is hypothesised that indebtedness depends upon the size of land owned, family size, the ratio of earning members in the family, education level of the family head, farm income, expenditure on farm inputs and inventory, loans taken for consumption or unproductive purpose, proportion of non-institutional debt to total debt, and loss of rent due to crop failure, etc.

Table 3 represents the coefficients for the different factors and their relationships to the outstanding debt. The value of R^2, indicating how appropriately the variables included in the model explained the variations of the indebtedness among the different farm-size categories, arrived at 0.573 for all the sampled farmer households. The value of R^2 obtained was 0.754 among the marginal farmer households, while it was 0.816, 0.475, 0.477, and 0.520 among the small, semi-medium, medium, and large farmer households, respectively.

Out of the household demographic factors, the estimated regression coefficients of family size and education level of the head of the family had a positive and significant influence on the indebtedness. In contrast, the coefficient of the ratio of earning members in the family had turned out to be insignificant with a negative sign. It implied that, other things remaining the same, the level of outstanding debt among the farmer households in the cotton belt area of rural Punjab is not significantly impacted by the ratio of earning members in the family. Singh *et al,* 2019 found a negative

relationship between earning members and the level of debt.

The coefficient of family size was turned out to be positive among different categories of farmer households except for the marginal farmer households, where it came with a negative sign. It indicated that as the size of the family increased, the level of outstanding debt also increased because farmer households had to spend more on children's food, clothing, education, health, marriages, etc., and taking care of old-aged dependents. Singh *et al,* 2019 also obtained a direct relationship between family size and indebtedness. However, in the case of marginal farmer households, the coefficient with a negative sign specified that the marginal farmer households having a smaller size of family with 4 to 5 members had to incur low expenses on family maintenance. Also, they engaged their children to wage work at an early age which worked as helping hands to the family's income. Therefore, an increase in family size among the marginal farmer households reduced the level of debt.

The positive regression coefficient of the education level of the head of the family implied that the cotton belt was backward in terms of the education status of the family head of farmer households. They had a lower level of education status, and most of them were either illiterate or had attained education upto primary, middle, or high levels only. The education level of the family head had not increased to the level where it impacted to reduce the level of debt among the farmer households. Only semi-medium and large farmer households had attained coefficients of the education level of the family head with a negative sign. Still, coefficients had not significantly influenced the level of debt. The study conducted by Singh *et al,* 2014 also gave a positive relationship between education and debt. As the ratio of earning members in the family increased, it decreased the level of debt among all the farm-size categories except for the marginal farmer households. It implied that the income level of earning members in the family of the marginal household was so low that it failed to cover the income-consumption gap and could not reduce the level of debt.

The regression coefficient of ownership of land had turned out to be positive and significant among the farmer households indicating that as the size of land owned increased, the amount of an outstanding debt increased. This finding was supported by the studies of Singh *et al,* 2014, Singh *et al,* 2017, and Pal and Singh, 2012. The findings of Darling, 1947 pertained to the confounding correlation of indebtedness with affluence rather than with poverty of the peasant, and it suggested that mere desire to borrow did not suffice; it must be matched by the borrower's ability to repay the creditor. By the time of the Provincial Banking enquiries undertaken during 1928-30, Dhanagare, 1979 found the highest incidence of indebtedness, both by the number of borrowers and amounts borrowed, among the most affluent and the better-off sections of the peasantry, as well as among the small and big landlords.

The estimated regression coefficient of farm income had a negative relationship with the level of debt for different

Table 3: Socio-economic factors determining indebtedness: Multiple regression analysis

Factors	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmer Households
Land owned (in acres)	0.047	0.010	0.138***	0.170**	0.079	0.153*
Family size	-0.024	0.042	0.015	0.140***	0.141	0.104*
Ratio of earning members	0.004	-0.042	-0.106	-0.036	-0.127	-0.005
Education level of family head	0.032	0.008	-0.002	0.134***	-0.111	0.071**
Farm income (Rs. per acre)	-0.025	-0.086	-0.062	-0.075	-0.030	-0.015
Expenditure on farm inputs and inventory	0.465*	0.502*	0.393*	0.344*	0.330	0.397*
Loan for consumption or unproductive purpose	0.542*	0.541*	0.369*	0.375*	0.464**	0.391*
Proportion of non-institutional debt	0.069	0.015	0.135***	0.162**	-0.078	0.052***
Loss of rent due to crop failure	0.266*	0.321*	0.182*	0.121	0.119	0.172*
R^2	0.754	0.816	0.475	0.477	0.520	0.573
F	36.787	57.259	12.477	10.659	2.044	76.000

Source: Field survey, 2016-17
*Note: *Significant at 1 %, ** at 5% and *** at 10% level*

farm-size categories. It implied that the more farm business income per acre farmers received, the lesser the dependency on debt. The regression coefficient of expenditure incurred on purchasing farm inputs and inventory had attained a positive and significant relationship with the level of debt for all the farm-size categories except for the large farmer households for whom the coefficient was positive but not significant. It implied that the cost of farm input had been increased, and the farm machinery and equipment also cost higher to the farmer households. Only few farmers could afford tractor from their savings. Generally, the farmers had to borrow money to purchase farm machinery and equipment like a tractor, rotavator, reaper, combine harvester, etc., which cost Rs. 4 lakhs to Rs. 12 lakhs. It occurred as the first important factor determining indebtedness with a significant regression coefficient of 0.397.

The regression coefficient of loans for consumption or unproductive purpose having positive and significant value was turned out to be the second most crucial factor determining the level of debt among all the farmer households. It depicted that the level of debt increased as the amount spent on consumption or unproductive purposes increased. The study conducted by Singh *et al*, 2019 and Pandey, 2016 also supported a positive relationship between loans for consumption or unproductive purpose and the level of debt.

The coefficient of the proportion of non-institutional debt out of the total debt obtained a positive and significant relationship with the level of debt for an average farmer household. Singh *et al,* 2014 also showed a positive association between the ratio of non-institutional debt and indebtedness. Among the marginal and small farmer households, the relationship was positive but non-significant. In contrast, in the case of semi-medium and medium farmer households, significant coefficients occurred with a positive sign. In the case of large farmer households, the regression coefficient obtained was non-significant and had a negative sign. It indicated that among all the marginal, small, semi-medium, and medium farmer households, as the debt from non-institutional sources increased, outstanding debt increased. However, the large farmer households obtained 87.20 per cent of the total debt from institutional sources because they had enough resources to pledge as collateral to get credit.

The regression coefficient of loss of rent due to crop failure had a positive relationship with the amount of debt among all the farm size categories and it was highly significant among the marginal, small, and semi-medium farmer households. It revealed that the amount of debt also increased due to crop failure. The farmer households generally borrowed money for paying the high rents of leased-in land, but due to crop failure, they failed to repay that loan. The farmer households in the cotton belt of rural Punjab confronted with the problem of cotton failure, which was a significant factor in determining the amount of debt.

Conclusions and Policy Implications

The above analysis clearly highlighted that more than $4/5^{th}$ of the farming households in the cotton belt of rural Punjab were under debt. The average amount of debt per sampled farmer household was found to be Rs. 406970. The debt was more burdensome for the smaller categories than the large ones. The institutional sources emerged as more preferred sources of credit. All the farm-size categories except the marginal farmer households had obtained a major proportion of their loans from institutional sources, mostly from commercial banks. In contrast, the poor marginal farmer households, owning fewer assets, were highly dependent upon non-institutional sources of credit, mostly on commission agents. An average farmer household owed a significant proportion of 43.09 per cent of the total debt at a rate of interest ranging between 7 to 14 per cent per annum. The small, semi-medium, medium, and large farmer households had incurred the major proportion of the total debt at relatively lower interest rates, but the marginal farmer households had incurred a significant proportion of debt at higher rates of interest. The multiple regression analysis provided that indebtedness among the farmer households was positively and significantly determined by the factors including land owned, family size, expenditure on farm inputs and inventory, loans taken for consumption or unproductive purpose, loss of rent due to crop failure, and ratio of non-institutional debt. The level of debt decreased with increased farm income and the ratio of earning members in the family.

Thus serious efforts are required to increase the income and reduce the extent of debt among the farmer households. So, government should take some measures such as loan waiving or rescheduling the loans in case of crop failure; ensure remunerative minimum support prices of agricultural produce; provide subsidised farm inputs including seeds, fertilizers, pesticides, and diesel; make provision of agricultural machinery on a custom hiring basis, and credit at a low interest rate; rationalising rental rates of agricultural land; implement land reforms in favour of the marginal and small farmers; and so on. Furthermore, the government must spend on research and development activities and ensure the proper checks on the quality of seeds, fertilisers and pesticides to save the cotton crop. Also, the farmers must use the government recommended farm inputs and techniques to reduce the chances of crop failure.

Moreover, agro-based industries should be established for generating gainful employment opportunities at the village level in the cotton belt of rural Punjab. The public distribution system should be effectively managed to include all the poor marginal and small farmer households to distribute all essential food items. It has been noticed in the field survey that either due to social compulsion or on flaunting symbols

of social status, an average farmer household also incurred a significant amount of debt for unproductive purposes such as house construction and major repairs and, marriages and other socio-religious ceremonies. Still, if possible, the farmer households should avoid non-productive expenditure on weddings and other socio-religious ceremonies, especially if the farmer households cannot afford it without borrowing.

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